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CLAIMS

1. An electrolyte electrode assembly (12) sandwiched between a pair of separators (6a, 6b), said electrolyte 5 electrode assembly (12) comprising an anode (3), a cathode (4), and an electrolyte (2) interposed between said anode (3) and said cathode (4), wherein

a layer (14) is provided between said cathode (4) and said one of said separators (6a, 6b), said layer (14) 10 comprising material which has electron conductivity higher than that of said cathode (4), and which is capable of inducing oxygen reduction.

2. An assembly (12) according to claim 1, wherein 15 said layer (14) comprises complex oxide containing at least a rare-earth element A, a transitional metal element C, and oxygen O.

3. An assembly (12) according to claim 2, wherein the 20 rare-earth element A comprises at least one element selected from the group consisting of La, Sm, Nd, and Pr, and the transitional metal element C comprises at least one element selected from the group consisting of Co, Fe, Ni, Cr, Mn, Ga and Ti.

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4. An assembly (12) according to claim 2, wherein said layer (14) further contains an alkaline-earth metal

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element B, and composition formula of material of said layer (14) is $A_xB_{1-x}CO_3$ ($0.5 \leq x \leq 1.0$).

5. An assembly (12) according to claim 4, wherein the rare-earth element A comprises at least one element selected from the group consisting of La, Sm, Nd, and Pr, the transitional metal element C comprises at least one element selected from the group consisting of Co, Fe, Ni, Cr, Mn, Ga and Ti, and the alkaline-earth metal element B comprises at 10 least one element selected from the group consisting of Ca, Sr, and Ba.

6. An assembly (12) according to any one of claims 2 through 5, wherein said layer (14) comprises perovskite 15 complex oxide.

7. An assembly (12) according to any one of claims 1 through 6, wherein said layer (14) has a thickness of 10 μm or less.

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8. A method of producing an electrolyte electrode assembly (12) sandwiched between a pair of separators (6a, 6b), said electrolyte electrode assembly (12) including an anode (3), a cathode (4), and an electrolyte (2) interposed 25 between said anode (3) and said cathode (4), said method comprising the steps of:

providing said anode (3);

stacking said electrolyte (2) on said anode for allowing oxide ions to move through said electrolyte (2), and then, applying a firing process to said anode (3) and said electrolyte (2);

5 providing said cathode (4) on said electrolyte (2) after the firing process; and

providing a layer (14) on said cathode (4), said layer (14) comprising material which has electron conductivity higher than that of said cathode (4), and which is capable 10 of inducing oxygen reduction.

9. A method of producing an electrolyte electrode assembly (12) according to claim 8, wherein a firing process is applied to said cathode (4) and said layer (14) after 15 said layer (14) is provided on said cathode (4).

10. A method of producing an electrolyte electrode assembly (12) according to claim 8, wherein said layer (14) is provided after applying a firing process to said cathode 20 (4), and then, a firing process is applied to said layer (14).

11. A method of producing an electrolyte electrode assembly (12) sandwiched between a pair of separators (6a, 25 6b), said electrolyte electrode assembly (12) including an anode (3), a cathode (4), and an electrolyte (2) interposed between said anode (3) and said cathode (4), said method

comprising the steps of:

providing said electrolyte (2) by applying a firing process to powder of material which is prepared to have oxide ion conductivity;

5 providing said anode (3) on one surface of said electrolyte (2);

providing said cathode (4) on the other surface of said electrolyte (2); and

10 providing a layer (14) on an exposed surface of said cathode (4), said layer (14) comprising material which has electron conductivity higher than that of said cathode (4), and which is capable of inducing oxygen reduction.

12. A method of producing an electrolyte electrode assembly (12) according to claim 11, wherein said anode (3) is stacked on one surface of said electrolyte (2), and said cathode (4) is stacked on the other surface of said electrolyte (2), then, said layer (14) is stacked on said cathode (4), and subsequently, a firing process is applied 20 to said anode (3), said cathode (4) and said layer (14).

13. A method of producing an electrolyte electrode assembly (12) according to claim 11, wherein a firing process is applied to said anode (3), then, said cathode (4) and said layer (14) are stacked on said electrolyte (2), thereafter, a firing process is applied to said cathode (4) 25 and said layer (14).

14. A method of producing an electrolyte electrode assembly (12) according to claim 11, wherein (i) a firing process is applied to said anode (3), then, (ii) said cathode (4) is stacked on said electrolyte (3), then, (iii) a firing process is applied to said cathode (4), then, (iv) said layer (14) is stacked on said cathode (4), and then, (v) a firing process is applied to said layer (14).